# CDP-M20S

# SERVICE MANUAL

*UK Model*

| | |
|---|---|
| System | Compact disc digital audio system |
| Laser | Semiconductor laser ($\lambda$ = 780 nm) |
| Laser output | Max. 0.4 mW* |
| | * This ouput is the value measured at a distance of about 1.6 mm from the objective lens surface on the Optical Pick-up Block. |
| Error correction | Sony Super Strategy Cross Interleave Reed Solomon Code |
| Number of channels | 2 |
| D-A conversion | 16-bit linear |
| Frequency response | 2 Hz – 20 kHz ($\pm^{0.5}_{1.0}$ dB) |
| Signal to noise ratio | More than 95 dB |
| Harmonic distortion | Less than 0.01% (at 1 kHz) |
| Channel separation | More than 90 dB |

Out puts

| | Type | Output level | Load impedance |
|---|---|---|---|
| LINE OUT | Phono jack | 2 V (50 kilohms) | more than 10 kilohms |
| HEADPHONES | Stereo phone jack | 4.5 mW (32 ohms) | — |

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

## General

| | |
|---|---|
| Power requirements | Supplied from HST-D3CD/D4CD |
| Dimensions | Approx. 355 × 80 × 275 mm (w/h/d) (14 × 3¼ × 10⅘ inches) including projecting parts and controls |
| Weight | Approx. 2.5 kg (5 lbs 9 oz), net |

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## COMPACT DISC PLAYER

## SONY®

## FEATURES

- PROGRAM play for playing the selections in a desired order
- SHUFFLE play for playing the selections in a random order
- REPEAT function for a single selection, the whole disc, PROGRAM play, or SHUFFLE play
- Easy-to-read display window shows the track number being played, elapsed playing time, and the remaining time

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

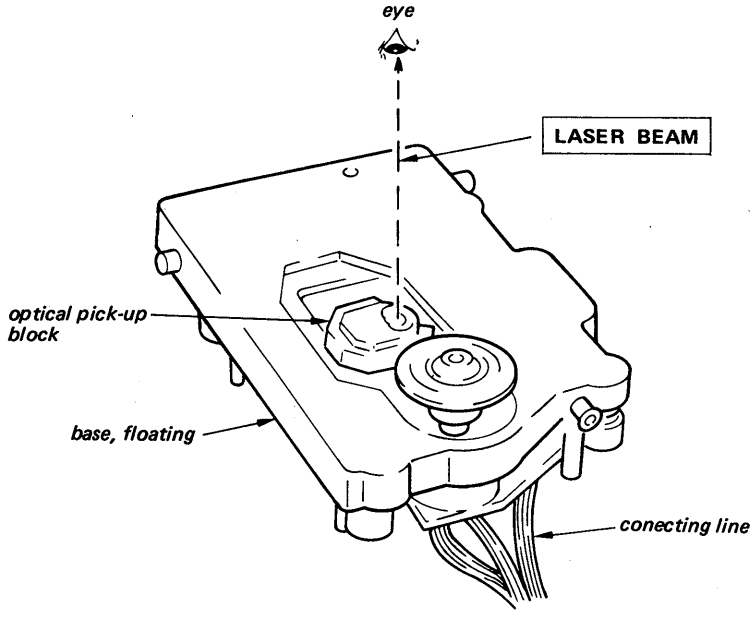
**CAUTION**
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CLASS 1
LASER PRODUCT

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

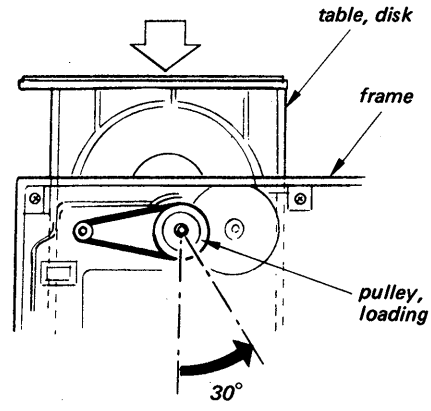
**WARNING !!**

**WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.**

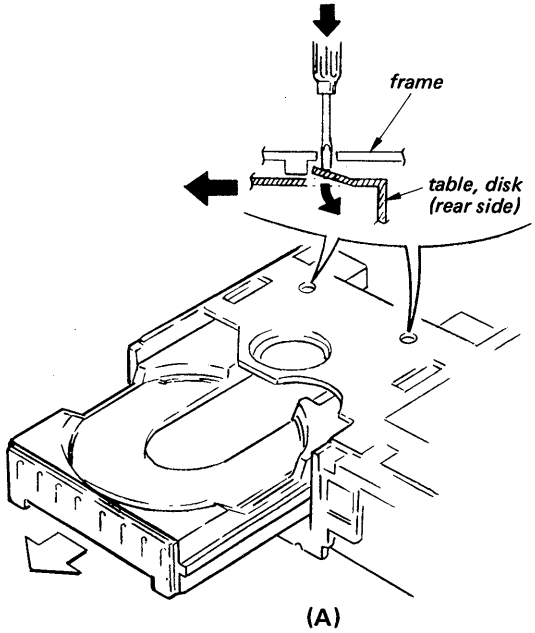


### NOTES ON REPAIR

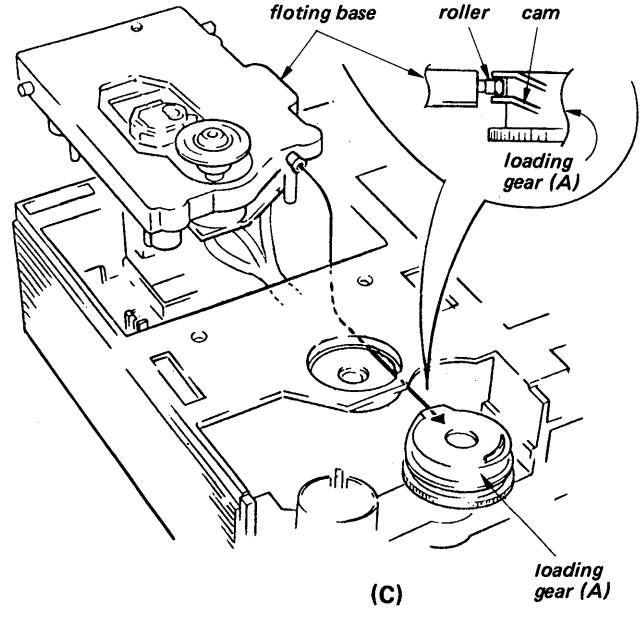
- When removing the disk-table, put the small screwdriver into the hole.
  Pull off the disk-table toward you while pushing the screwdriver. See figure (A).
- When re-assembling the disk-table, rotate the loading pulley by 30-degree in the direction of the arrow by finger, and put the table slowly. See figure (B).
- When re-assembling the floating base, set it so that the floating-base roller is engaged with the cam of the loading gear (A). See figure (C).




(B)




(A)




(C)

## TROUBLESHOOTING

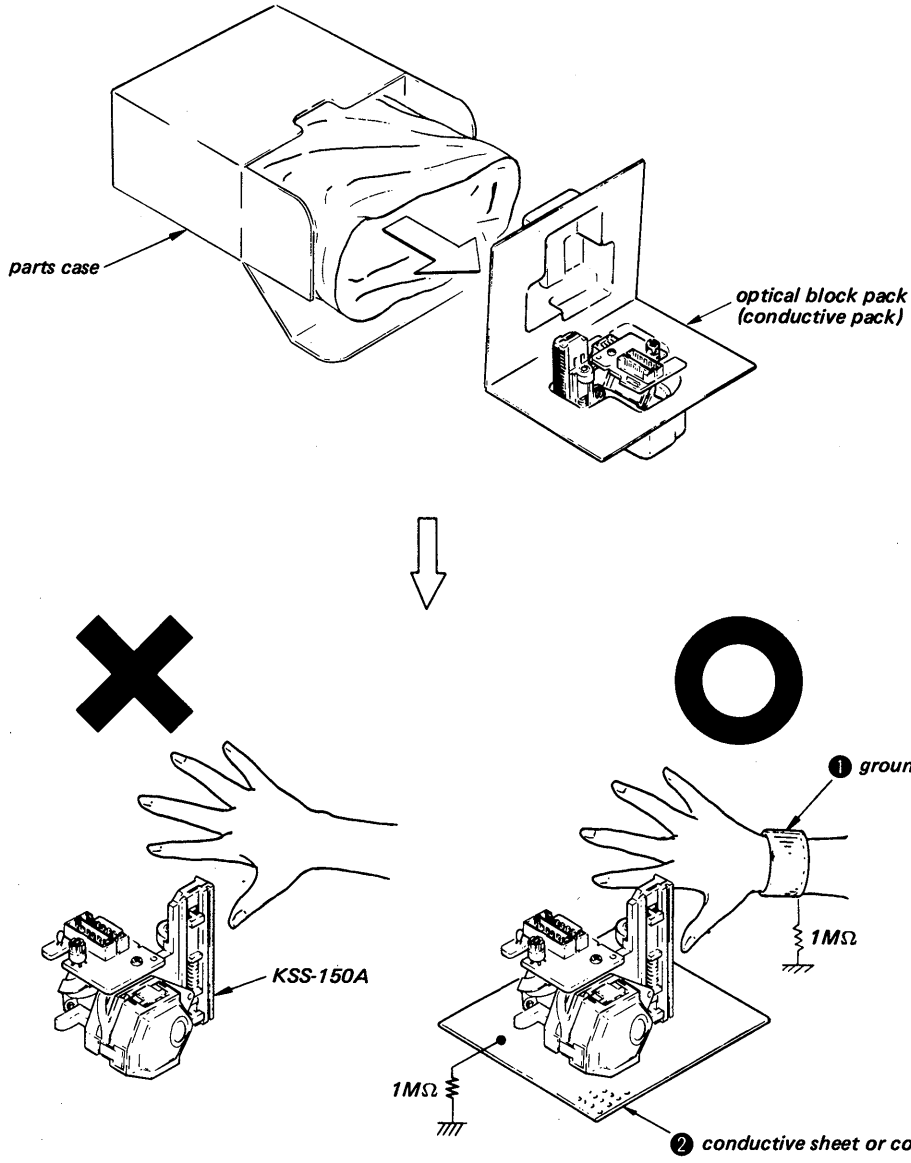
| | | |
|---|---|---|
| Play does not begin. | The disc is incorrectly inserted. | Insert the disc correctly. |
| | The disc is extremely dirty. | Clean the disc. |
| | The disc is inserted upside down. | Insert the disc with the label surface up. |
| | The ▶II button has been pressed. | Press the ▶II button again to release pause. |
| | Moisture condensation. | Leave the player turned on for about an hour. |
| No audio from one or both channels | Incorrect connections | Connect properly. |

# NOTES ON HANDLING THE OPTICAL BLOCK (KSS-150A)

The laser diode inside the optical block may be damaged by static electricity in clothes or the human body.

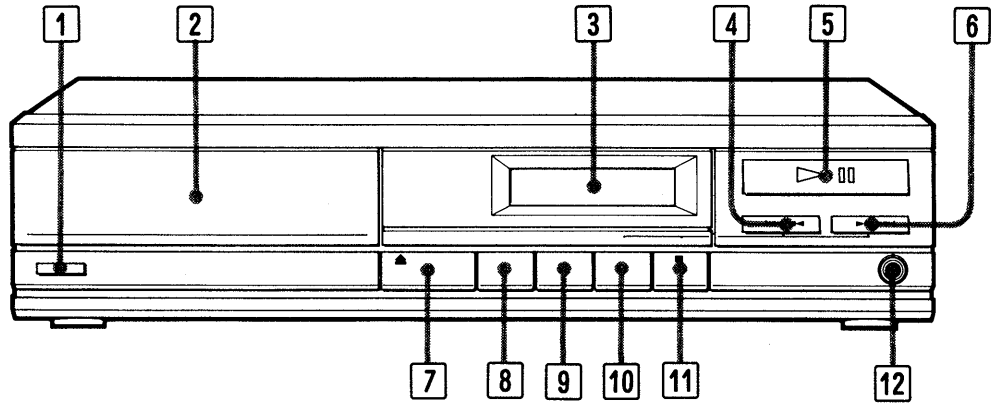
The following procedures are required when unpacking and repairing KSS-150A in order to avoid static electricity damage.

1. Body grounding
   Be sure to wear a ground belt (less than $10^8\,\Omega$) in order to release the static electricity stored in the body.
2. Workbench grounding
   Place a conductive sheet (less than $10^9\,\Omega$) or copper plate on the bench where KSS-150A is to be placed to ground it.
3. Static electricity in the clothing will not be released by the ground belt, so be careful not to let KSS-150A touch clothing.

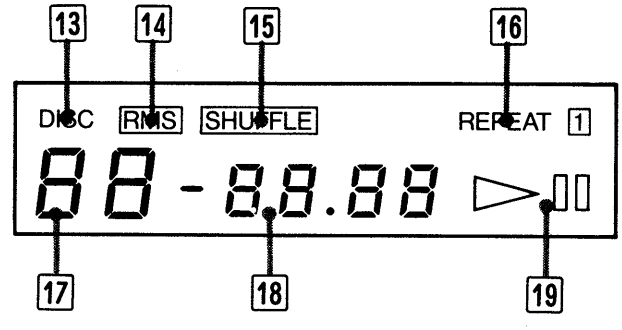


# SECTION 1
# LOCATION AND FUNCTION OF CONTROLS

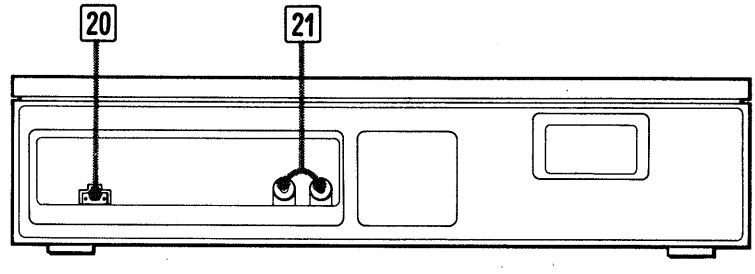
**Front panel**




**Display window**




**Rear panel**



[1] **POWER switch**

[2] **Disc compartment**

[3] **Display window**

[4] **⏮ ◀◀ (AMS/manual search) button**
Press momentarily to locate the beginning of the selection being played.
Keep the button pressed to go back at high speed.

[5] **▶ ⏸ (play/pause) button**
Press to play during stop.
Press to pause during play.
Press to play during pause.

[6] **▶▶ ⏭ (AMS/manual search) button**
Press momentarily to skip to the beginning of the next selection.
Keep the button pressed to go ahead at high speed.

[7] **⏏ OPEN/CLOSE button**
Press to open or close the disc compartment.

[8] **SHUFFLE button**
Press to start shuffle play.
To release, press again.

[9] **REPEAT button**
Press to repeat play.

[10] **TIME/PROGRAM button**
Press once during play to display the index number of the selection being played, and press again to display the remaining time of the whole disc or program.
Press during stop to program the desired selection.

[11] **■/CLEAR (stop/clear) button**
Press to stop disc play.
Press to clear the memory of the programmed selections one by one.

[12] **HEADPHONES jack**

[13] **DISC indicator**
Lights up when a compact disc is inside or when the disc compartment is opened.

[14] **RMS indicator**
Lights up during programming of the selections and program play.

[15] **SHUFFLE indicator**
Lights up during shuffle play.

[16] **REPEAT indicator**
**REPEAT 1:** Lights up during repeat play of the selection being played.
**REPEAT:** Lights up during repeat play of the whole disc, program play or shuffle play.

[17] **TRACK indicator**
Shows the track number of the selection being played. When a disc is inserted, this indication shows the total selection number of the disc for a while.

[18] **TIME counter**
Shows the elapsed playing time of the selection being played in minutes and seconds. When the disc is inserted, this indication shows the total playing time of the disc for a while.

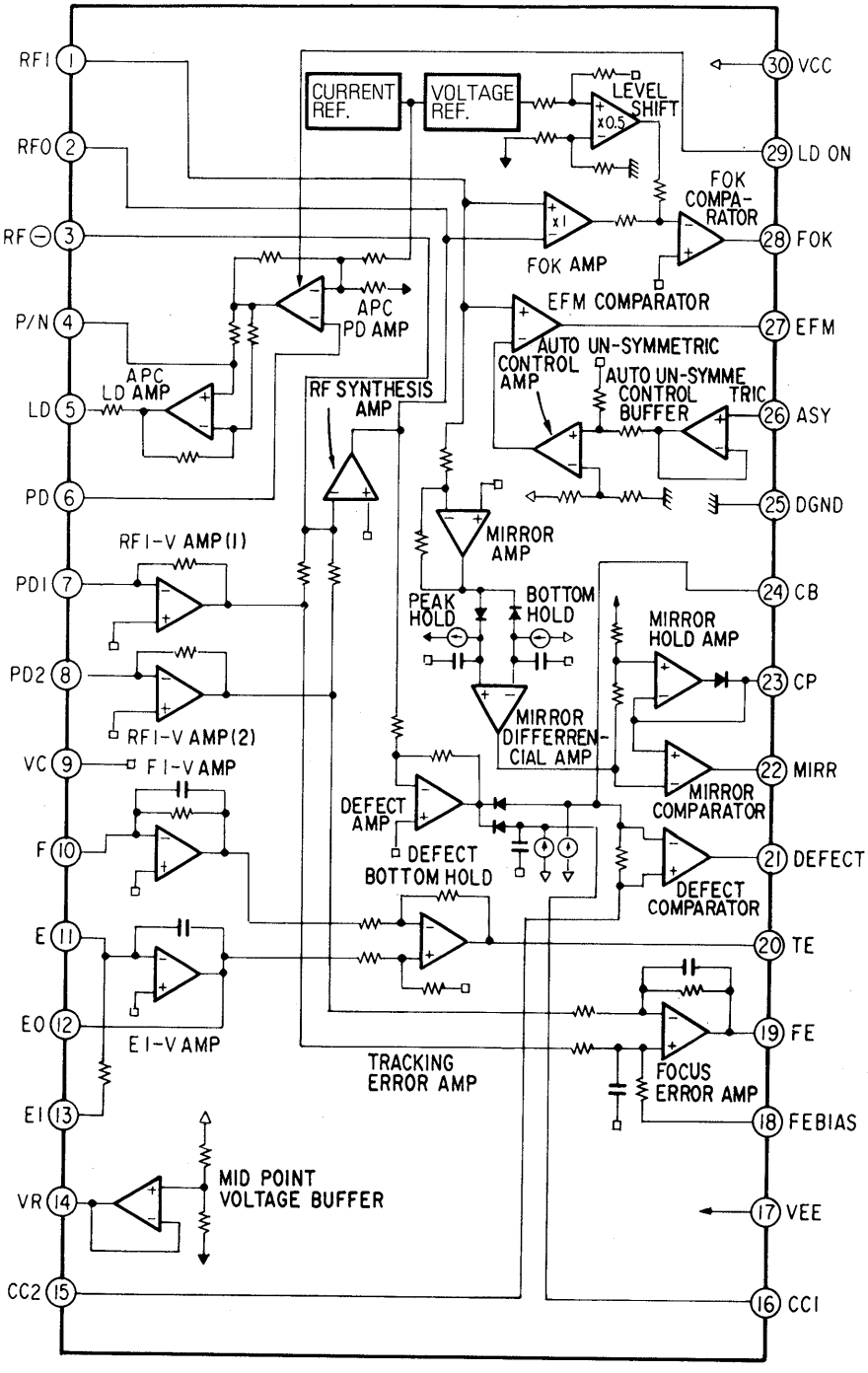
[19] **▶ indicator**
Lights up during play.
**▶ ⏸ indicator**
Lights up during pause.

[20] **AC IN jack**

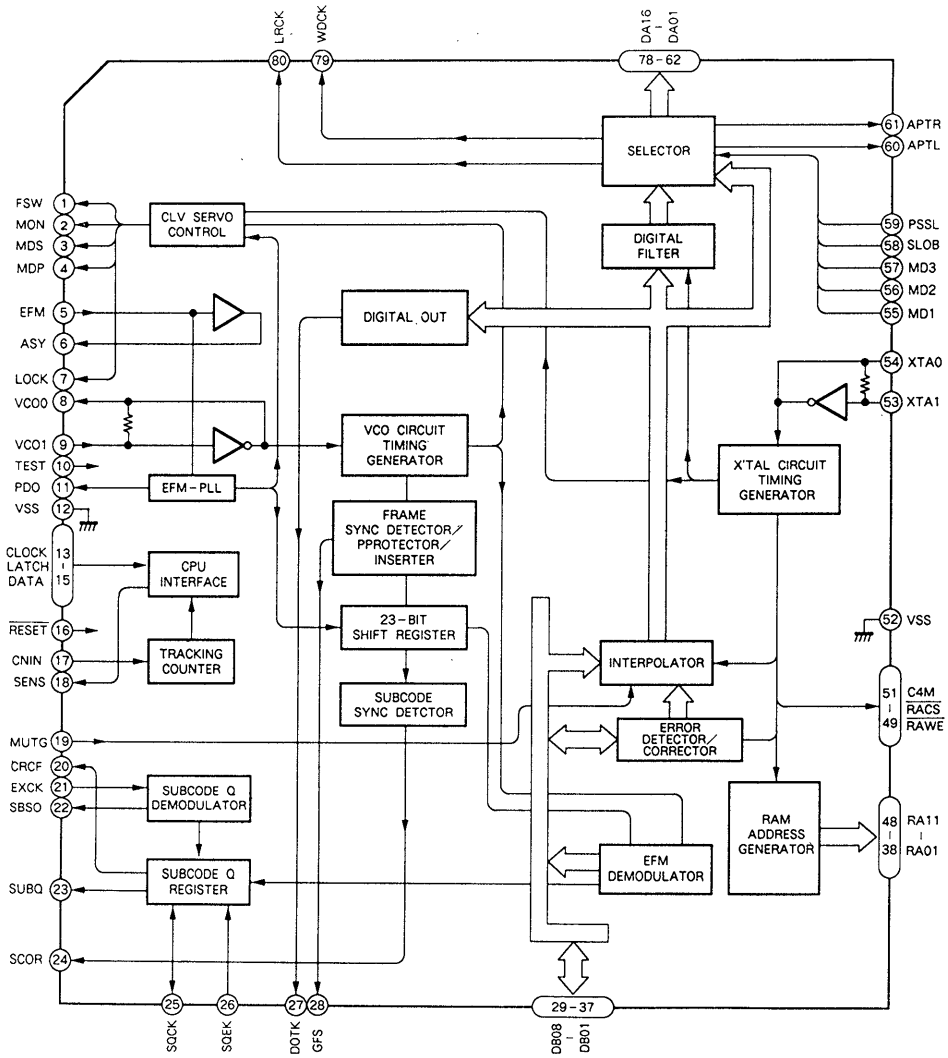
[21] **LINE OUT (left/right) terminal**

# SECTION 2
# IC BLOCK DIAGRAM

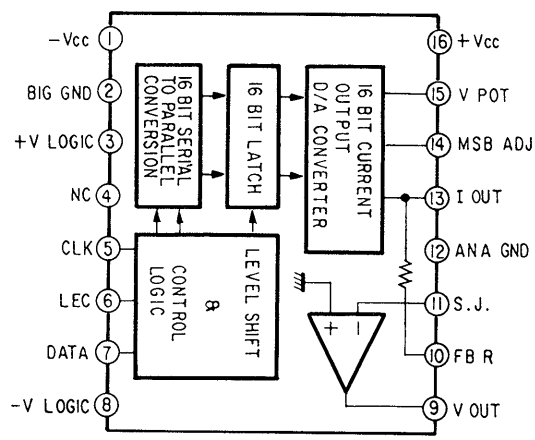
- **IC1**
  **CXA-1081M (RF AMP/SIGNAL PROCESSOR/LASER ON CIRCUIT/MID POINT VOLTAGE GENERAT)**



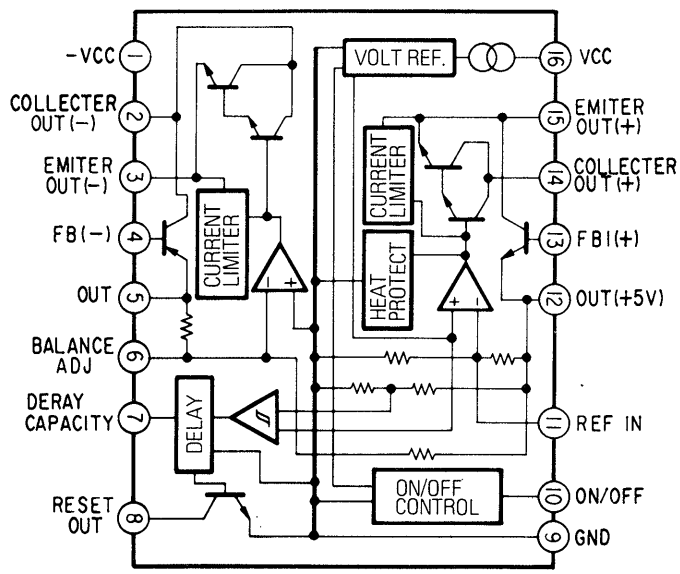
- **IC3**
  **CXD-1135Q (DIGITAL SIGNAL PROCESSOR/CLV SERVO)**



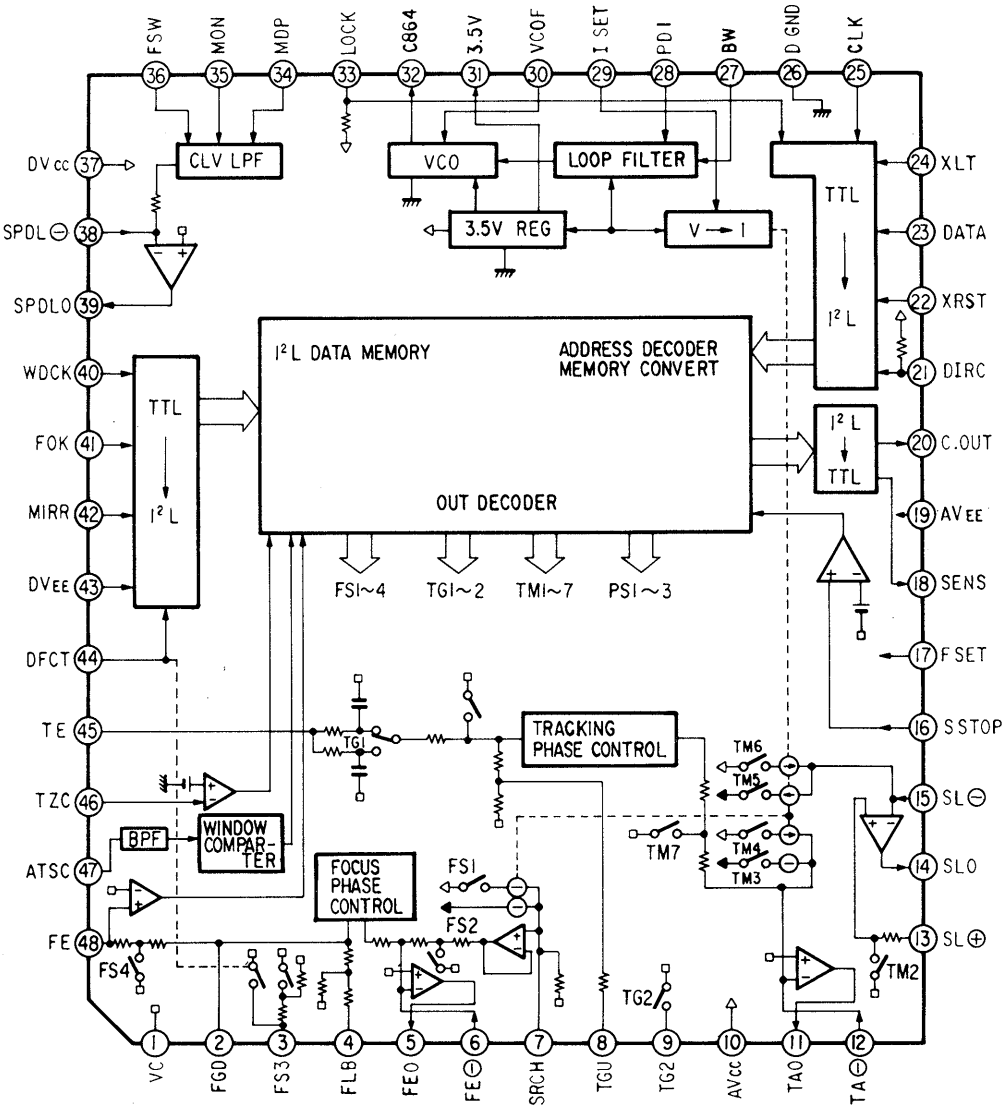

- **IC10**
  **PCM56P-S (D/A CONVERTER)**



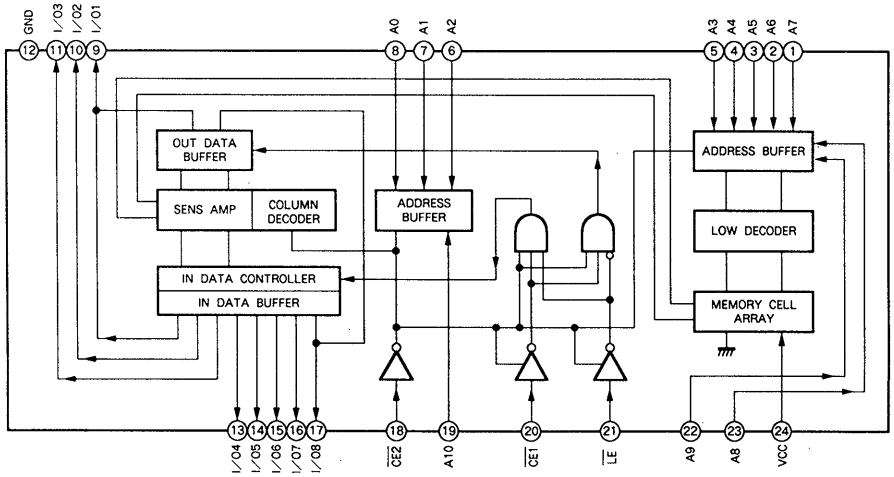

- **IC8**
  **M5290P (POWER)**



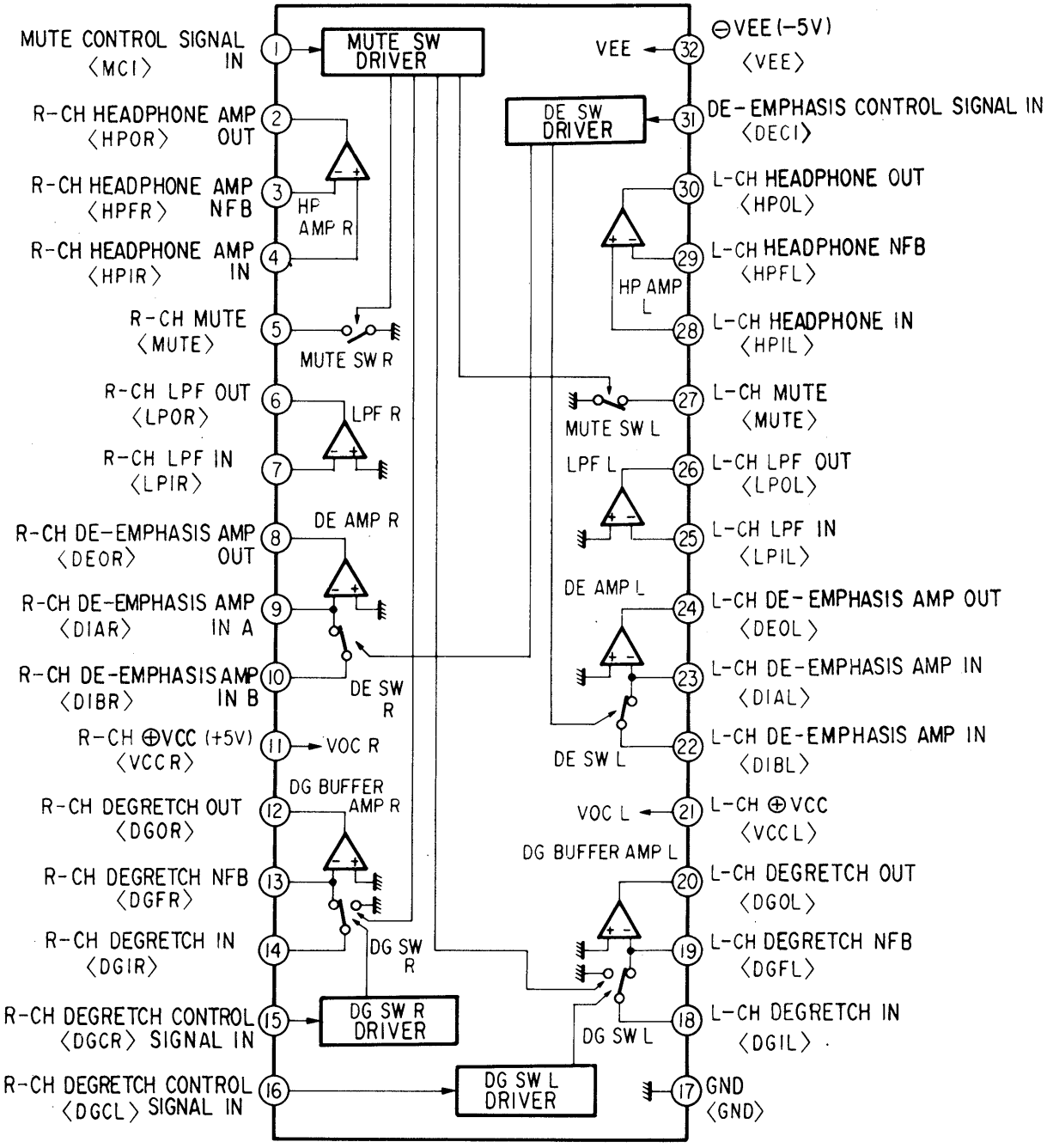
- **IC2**
  **CXA-1082Q (FOCUS/TRACKING/SLED SERVO)**




- **IC4**
  **LC-3516AML (16K BIT RAM)**



- **IC9**
  **M5156SP (AUDIO)**



# SECTION 3
# ADJUSTMENTS

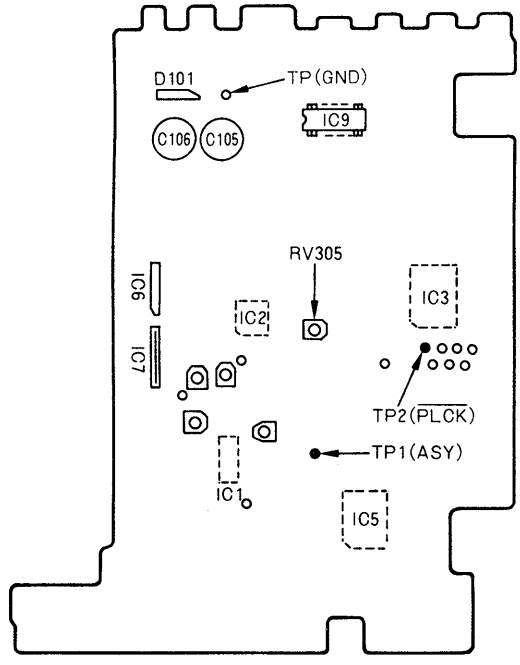
## ELECTRICAL ADJUSTMENT

1. Perform adjustments in the order given.
2. Use YEDS-1 disc unless otherwise indicated.
3. Use the osdilloscope with more than 10 MΩ impedance.

## RF PLL FREE-RUN FREQUENCY CHECK

1. Ground both test points TP1 (ASY).
2. Press OPEN/CLOSE button and open the disk holder.
3. Check for 4.3218 MHz at test point TP2 ($\overline{\text{PLCK}}$) using a frequency counter. If not, adjust RV305.

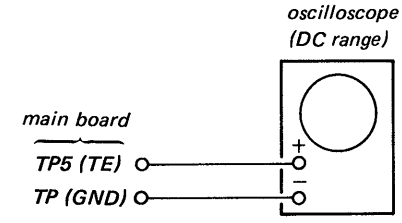
**Adjustment Location:** main board



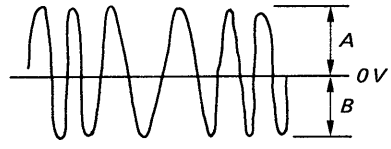

## E-F BALANCE ADJUSTMENT

This adjustment should be made when replacing TOP ( T-type Optical Pick-up).

**Procedure:**

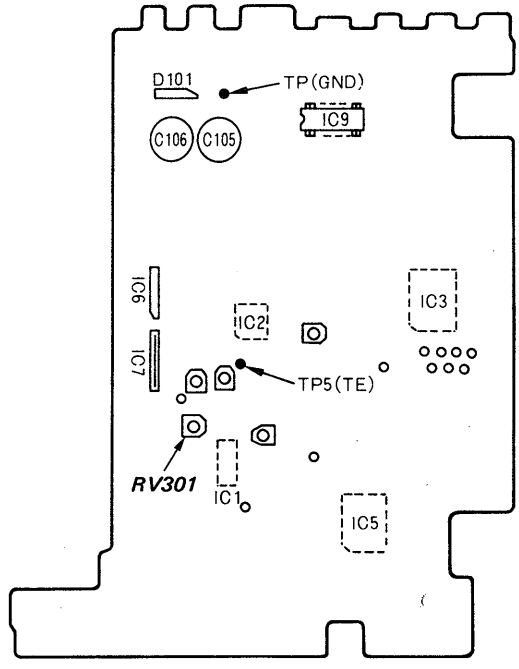



1. Connect oscilloscope to test point TP5 (TE) and ground.
2. Turn POWER switch on.
3. Put disc (YEDS-1) in and press ▷ button.
4. Press ◀◀ FF or ▶▶ REW botton.
5. Adjust RV301 for a vertically-symmetrical waveform as shown below. (A = B).




*VOLT/DIV: 1V*
*TIME/DIV: 1ms*

**Adjustment Location:** main board



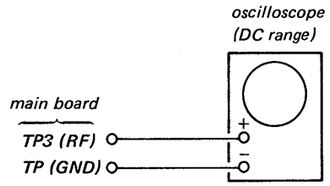
CDP-M20S

REFERENCE

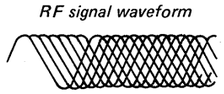
## Focus Bias Adjustment

This adjustment should be made when replacing TOP (T-type Optical Pick-up).

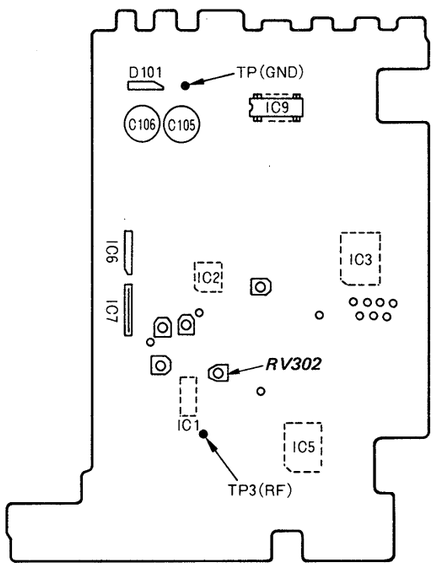
**Procedure:**




1. Connect oscilloscope to test points TP3 (RF) and ground.
2. Turn POWER switch on.
3. Put disc (YEDS-1) in and press ▷ button.
4. Adjust RV302 for an optimum waveform eye pattern or so that the peak is maximum. Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.




**Adjustment Location:** main board




## Focus/Tracking Gain Adjustment

A frequency response analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

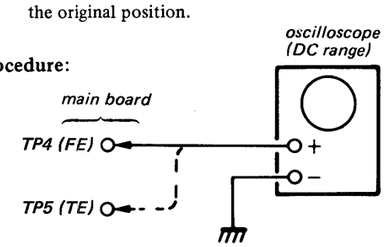
| Symptoms \ Gain | Focus | Tracking |
|---|---|---|
| • The time until music starts becomes longer for STOP →▷PLAY or automatic selection (⏮, ⏭buttons pressed. (Normally takes about 2 seconds.) | low | low or high |
| • Music does not start and disc continues to rotate for STOP→▷PLAY or automatic selection (⏮, ⏭buttons pressed.) | – | low |
| • Disc table opens shortly after STOP→▷PLAY. | low or high | – |
| • Sound is interrupted during PLAY. Or time counter display stops progressing. | – | low |
| • More poise during 2-axis device operation. | high | high |

The following is a simple adjustment method.

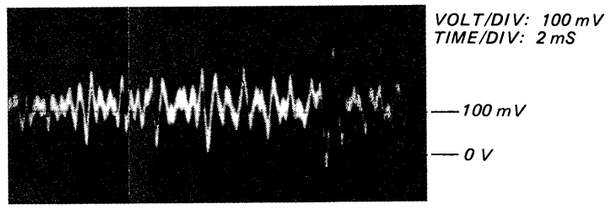
– Simple Adjustment –

**Note:** Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

**Procedure:**

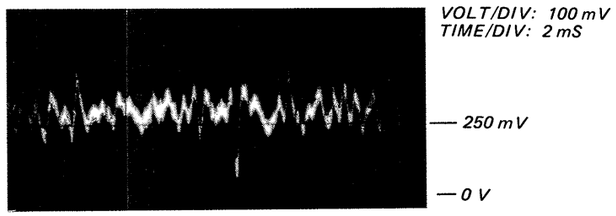



1. Keep the set horizontal.
   (If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)
2. Insert disc (YEDS-1) and press ▷ PLAY button.
3. Connect oscilloscope to main amp board TP4 (FE).
4. Adjustment RV303 so that the waveform is as shown in the figure below. (focus gain adjustment)

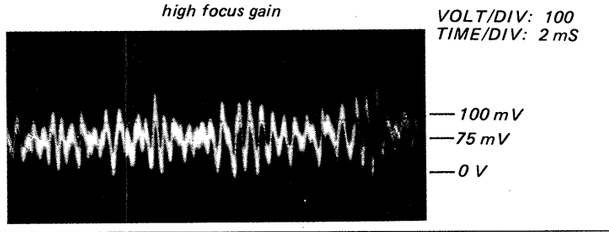



- Incorrent Examples (DC level changes more than on adjusted waveform)

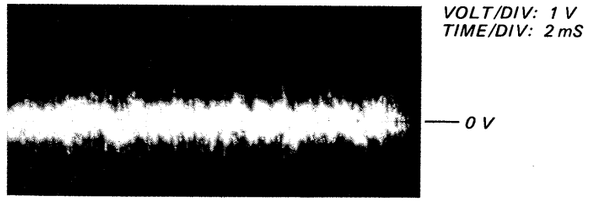
low focus gain




high focus gain

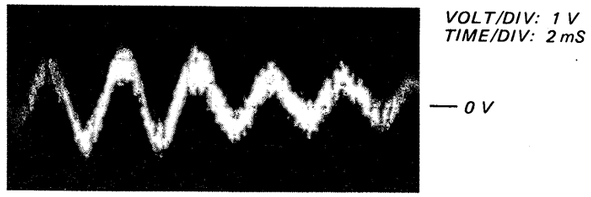



5. Connect oscilloscope to main board TP TE.
6. Adjust RV304 so that the waveform is as shown in the figure below. (tradking gain adjustment)

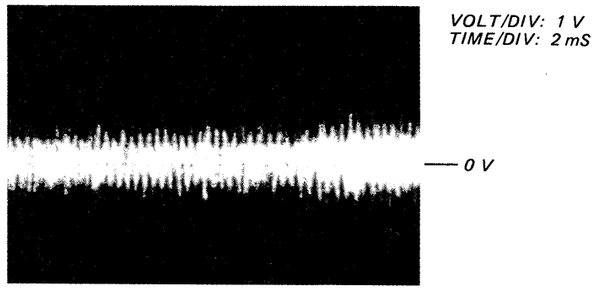



- Incorrect Examples (fundamental wave appears)

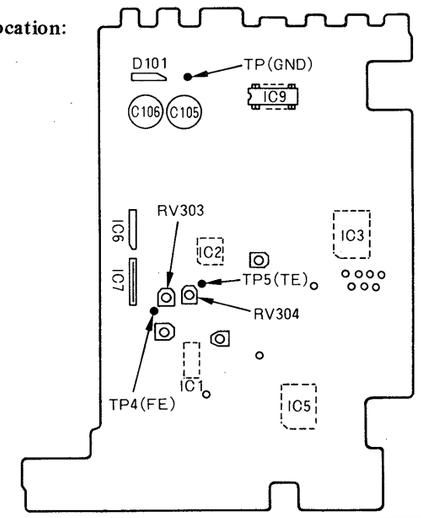
low tracking gain




high tracking gain
(higher fundamental wave than for low gain)




**Adjustment Location:**
main board



# SECTION 4
# MOUNTING DIAGRAM

- Semiconductor Lead Layouts

BX1457

M51565SP

1SS1555

M5290P
PCM56P-S

2SB1013

CXA1081M

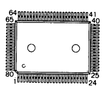
STA341M

2SB1133-R
2SD1666-R

CXA1082Q

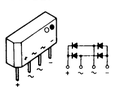
TA7256P

CXD1135Q
M50930-426FP




2SC3399
DTA124XS

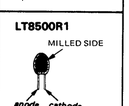
S1VB20



2SC3623-L

CXK5816M-10L

LT8500R1

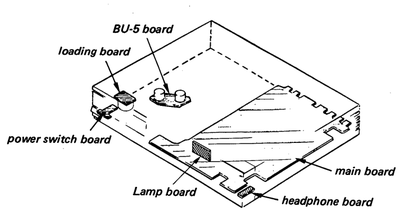



LC4969

- Semiconductor Locations

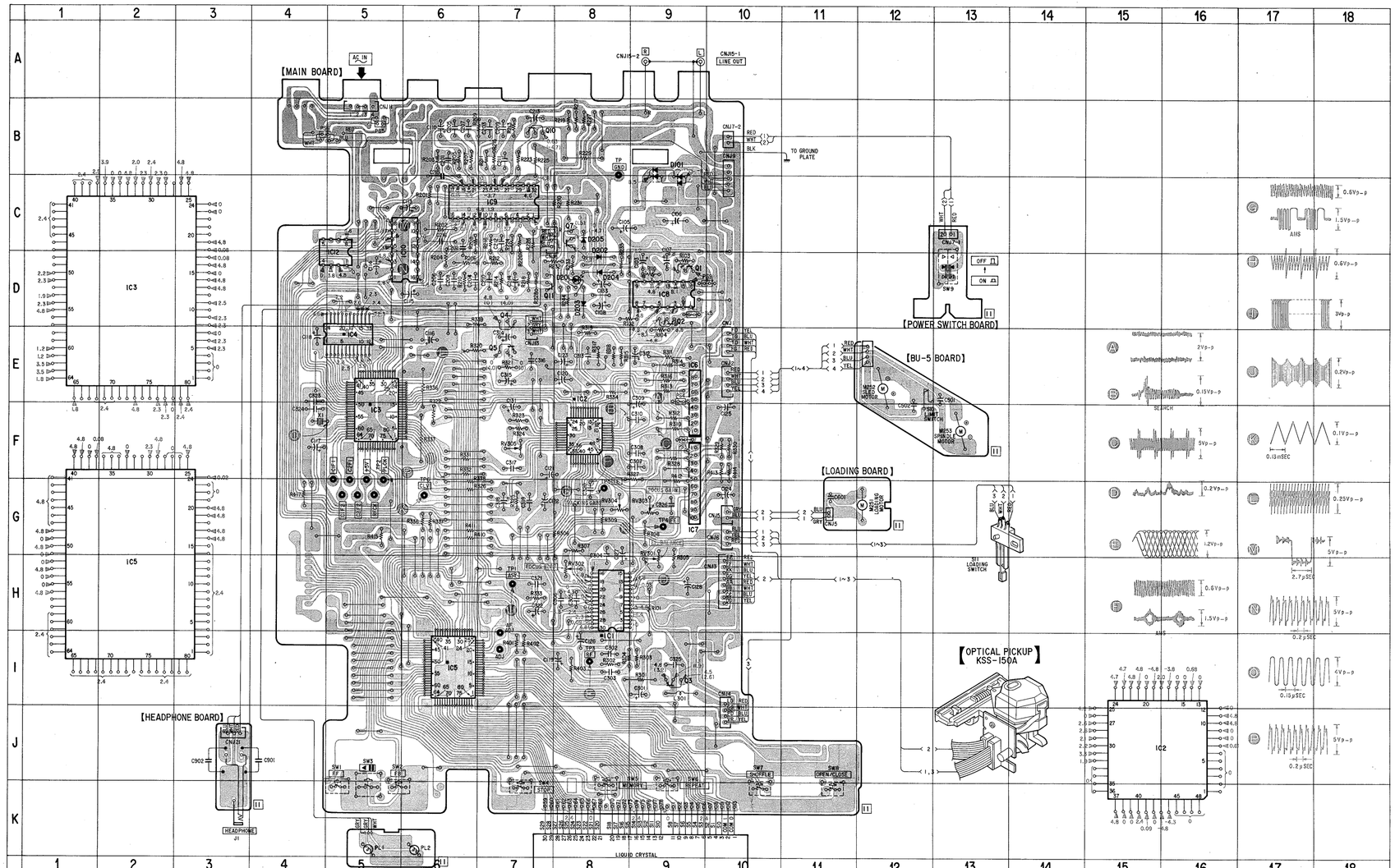
| Ref. No. | Location |
|---|---|
| D101 | B-9 |
| D201 | D-8 |
| D202 | D-8 |
| D203 | D-8 |
| D204 | D-8 |
| D205 | C-8 |
| IC1 | H-8 |
| IC2 | F-8 |
| IC3 | F-5 |
| IC4 | E-5 |
| IC5 | I-6 |
| IC6 | E-9 |
| IC7 | G-9 |
| IC8 | D-9 |
| IC9 | C-7 |
| IC10 | C-5 |
| IC12 | D-5 |
| Q1 | D-9 |
| Q2 | D-9 |
| Q3 | I-9 |
| Q4 | D-7 |
| Q5 | E-7 |
| Q7 | C-8 |
| Q10 | B-7 |
| Q11 | D-7 |

## CIRCUIT BOARD LAYOUT



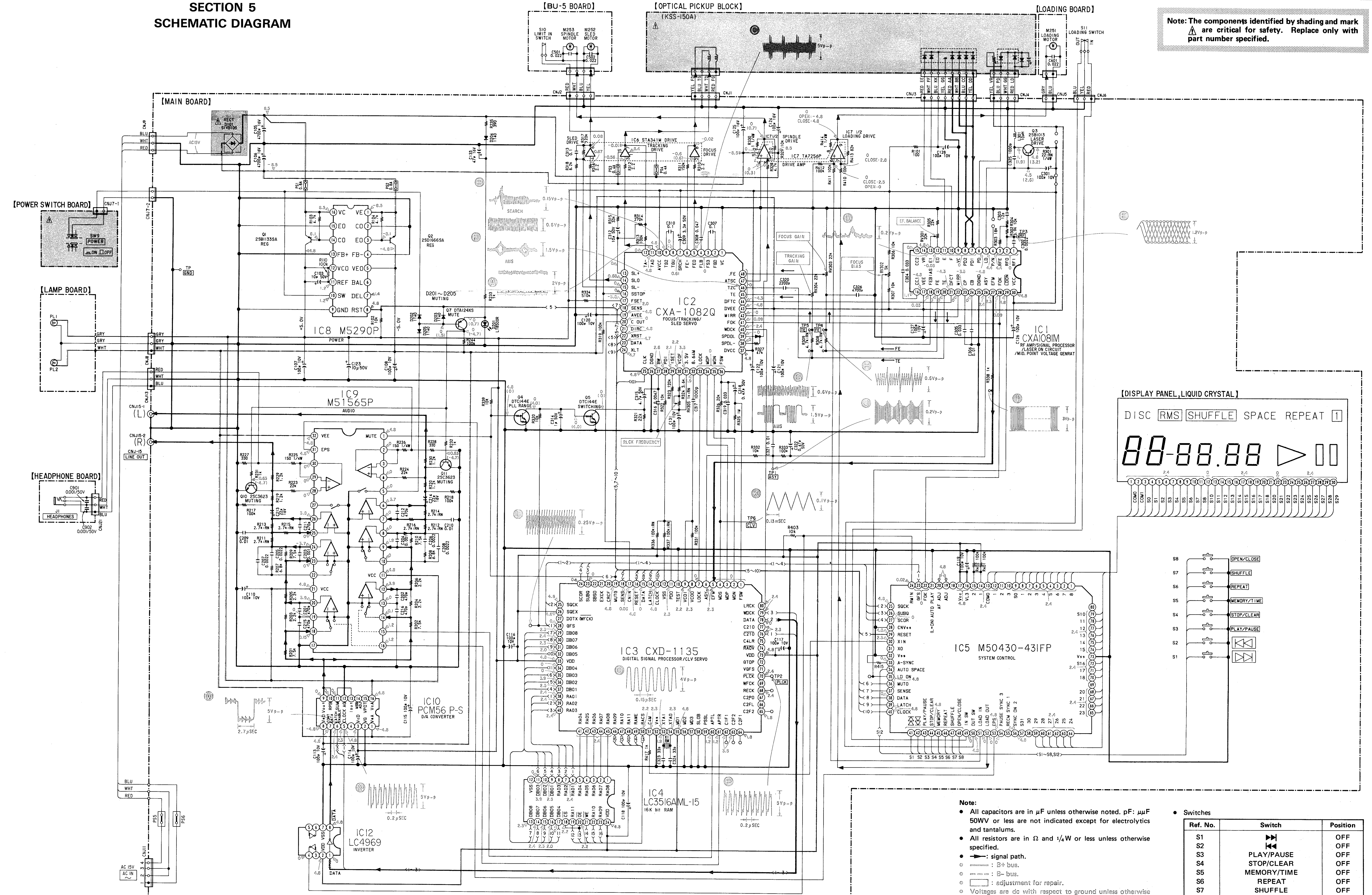




# SECTION 5
# SCHEMATIC DIAGRAM

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**




*OTHER RESISTORS 1/6W

**Note:**

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ➜: signal path.
- ═══ : B+ bus.
- ═ ═ ═ : B– bus.
- ☐ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Note: ⓐA ... Circled T.P. No's coincide with those in mounting and schematic diagrams.
- Waveforms are taken to ground by using oscilloscope.

- Switches

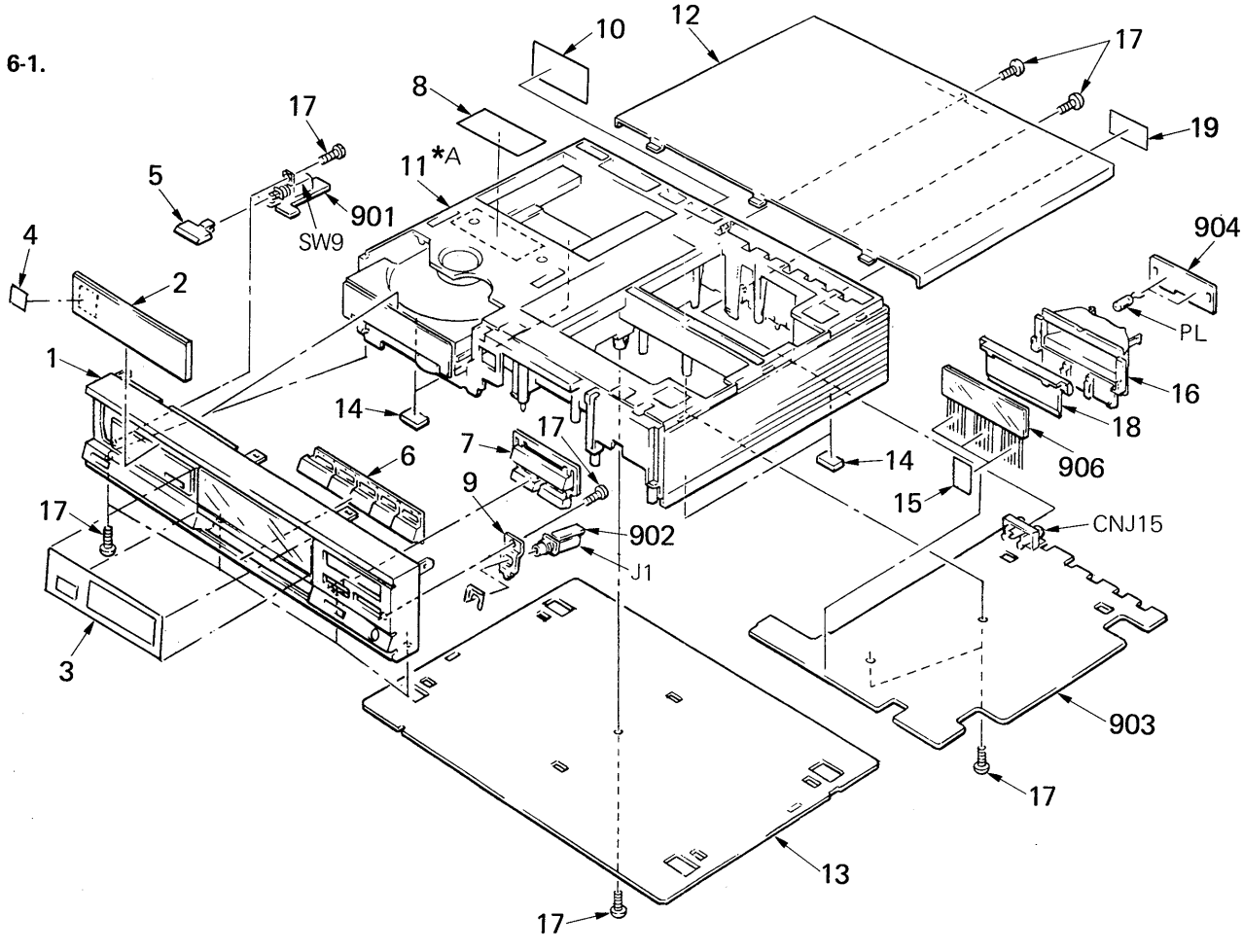
| Ref. No. | Switch | Position |
|---|---|---|
| S1 | ▶▶I | OFF |
| S2 | I◀◀ | OFF |
| S3 | PLAY/PAUSE | OFF |
| S4 | STOP/CLEAR | OFF |
| S5 | MEMORY/TIME | OFF |
| S6 | REPEAT | OFF |
| S7 | SHUFFLE | OFF |
| S8 | OPEN/CLOSE | OFF |
| S9 | POWER | OFF |
| S10 | LIMIT | OFF |
| S11 | LOADING | OFF |

# SECTION 6
# EXPLODED VIEWS AND PARTS LIST

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color Indication of Appearance Parts
  Example: (RED) ..... KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts' Color

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

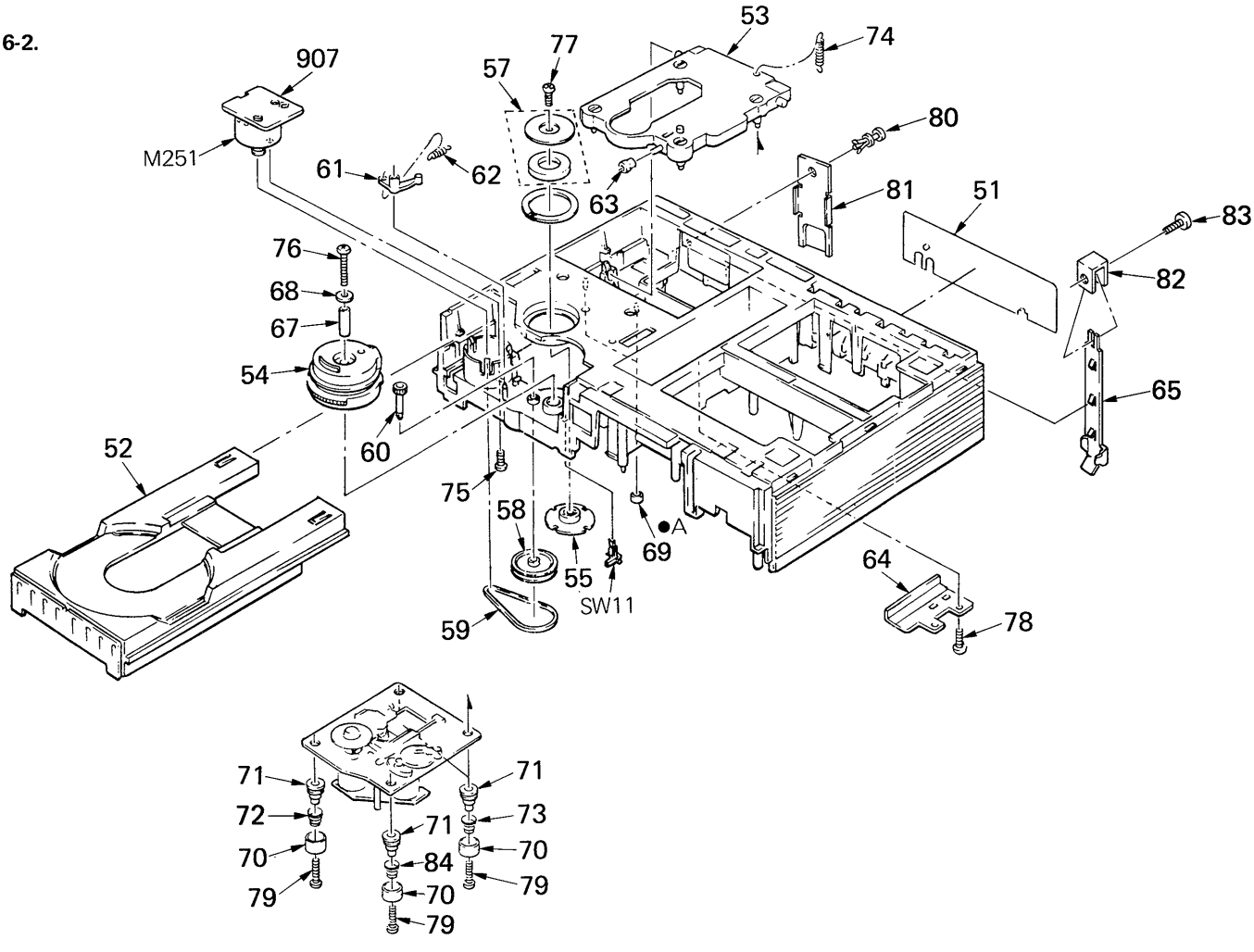
6-1.




| No. | Part No. | Description | Remarks |
|---|---|---|---|
| 1 | X-4917-516-1 | PANEL ASSY, CONTROL | |
| 2 | 4-917-531-22 | PANEL, LOADING | |
| 3 | 4-918-642-01 | PLATE (C), INDICATION | |
| 4 | 3-703-713-41 | STICKER, SONY SYMBOL (10) | |
| 5 | 4-917-525-11 | KNOB, POWER | |
| 6 | 4-917-533-11 | KNOB (A), CONTROL(OPEN/CLOSE,CHUFFLE etc) | |
| 7 | 4-917-532-01 | KNOB (B), CONTROL(PLAY/PASE,AMS) | |
| 8 | 4-885-843-02 | LABEL, CAUTION, LASER | |
| 9 | *4-917-513-01 | BRACKET, HEADPHONE | |
| 10 | *4-885-838-00 | LABEL, CLASS 1 | |
| 11 | X-4917-506-1 | FRAME ASSY | |
| 12 | 4-917-536-01 | CASE | |
| 13 | *4-917-535-01 | PLATE, BOTTOM | |
| 14 | 4-917-524-01 | FELT, FOOT | |

| No. | Part No. | Description | Remarks | S |
|---|---|---|---|---|
| 15 | 3-831-441-XX | CUSHION (25X15X0.3) | | |
| 16 | *4-917-529-01 | HOUSE, LAMP | | |
| 17 | 7-685-133-14 | SCREW +P 2.6X6 TYPE1 | | |
| 18 | *4-917-528-01 | ILLUMINATOR | | |
| 19 | 3-701-030-00 | LABEL, SERIAL NUMBER | | |
| 901 | *1-620-604-11 | PC BOARD, POWER SW | | |
| 902 | *1-620-605-11 | PC BOARD, HEADPHONE | | |
| 903 | *A-4651-119-A | MOUNTED PCB, MAIN | | |
| 904 | *1-620-606-11 | PC BOARD, LAMP | | |
| 906 | 1-807-686-11 | DISPLAY PANEL, LIQUID CRYSTAL | | |
| 907 | *1-620-603-11 | PC BOARD, LOADING MOTOR | | |
| J1 | 1-563-485-21 | JACK, LARGE TYPE (HEADPHONES) | | |
| PL1 | 1-518-606-11 | LAMP, PILOT | | |
| PL2 | 1-518-606-11 | LAMP, PILOT | | |

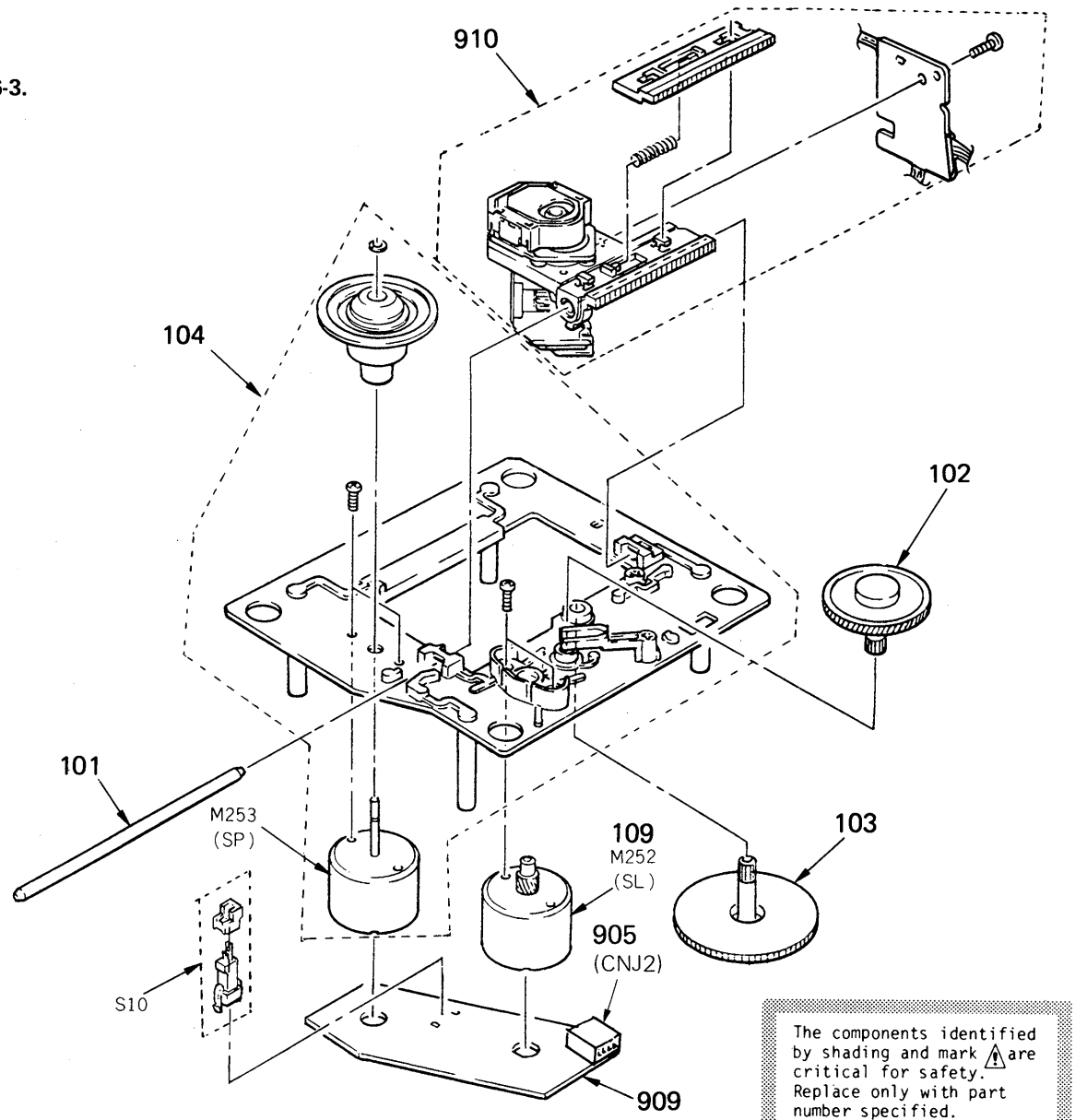
6-2.




| No. | Part No. | Description | Remarks |
|---|---|---|---|
| 51 | *4-917-643-01 | PLATE (D), INDICATION, TERMINAL | |
| 52 | 4-917-539-02 | TABLE, DISK | |
| 53 | 4-917-537-01 | BASE, FLOATING | |
| 54 | 4-917-534-01 | GEAR (A), LOADING | |
| 55 | 4-917-527-01 | PULLEY, CHUCKING | |
| 57 | A-4665-012-A | MAGNET ASSY | |
| 58 | 4-917-521-01 | PULLEY, LOADING | |
| 59 | 4-917-522-01 | BELT | |
| 60 | 4-917-516-01 | GEAR (B), LOADING | |
| 61 | 4-917-519-01 | LEVER, SET | |
| 62 | 4-917-514-01 | SPRING, TENSION | |
| 63 | 4-917-515-01 | ROLLER | |
| 64 | *4-917-517-01 | GUIDE, LEAD | |
| 65 | *4-917-511-01 | PLATE, GROUND | |
| 67 | 4-917-523-01 | COLLAR, CAM | |
| 69 | *3-576-990-01 | CUSHION | |

| No. | Part No. | Description | Remarks |
|---|---|---|---|
| 70 | 4-917-508-01 | HOLDER, SP | |
| 72 | 4-917-541-01 | SPRING (B) | |
| 73 | 4-917-507-01 | SPRING (H) | |
| 74 | 4-917-526-01 | SPRING, TENSION | |
| 75 | 7-628-254-00 | +PSW, 2.6X5 | |
| 76 | 7-685-552-19 | SCREW +BTP 3X25 TYPE2 N-S | |
| 77 | 7-685-532-19 | SCREW +BTP 2.6X5 TYPE2 N-S | |
| 78 | 7-685-647-19 | SCREW +BVTP 3X10 TYPE2 N-S | |
| 79 | 7-685-535-19 | SCREW +BTP 2.6X10 TYPE2 N-S | |
| 80 | 4-812-134-11 | RIVET NYLON, 3.5 | |
| 81 | 4-918-641-01 | COVER, INLET | |
| 82 | *4-918-670-01 | SUPORT, GROUND | |
| 83 | 7-682-148-09 | SCREW +BV 3X8 | |
| 84 | 4-918-669-01 | SPRING (W) | |
| M251 | A-4608-330-A | MOTOR ASSY (LOADING) | |
| S11 | 1-570-203-11 | SWITCH, LEAF | |

6-3.




The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

| No. | Part No. | Description | Remarks |
|---|---|---|---|
| 101 | 4-917-565-01 | SHAFT, SLED | |
| 102 | 4-917-567-01 | GEAR (M) | |
| 103 | 4-917-564-01 | GEAR (P), FLATNESS | |
| 104 | X-4917-505-1 | BASE (OUTSURT) ASSY | |
| 109 | X-4917-504-1 | MOTOR ASSY | |
| 905 | *1-564-720-11 | PIN, CONNECTOR (SMALL TYPE) 4P | |
| 909 | *1-620-097-11 | PC BOARD, SL/SP MOTOR | |
| 910 | ⚠8-848-062-01 | PICKUP, OPTICS KSS-150A | |
| S10 | 1-570-822-11 | SWITCH, LEAF | |

# SECTION 7
# ELECTRICAL PARTS LIST

NOTE:

- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| 901 | *1-620-604-11 | PC BOARD, POWER SW | | | |
| 902 | *1-620-605-11 | PC BOARD, HEADPHONE | | | |
| 903 | *A-4651-108-A | MOUNTED PCB, MAIN | | | |
| 904 | *1-620-606-11 | PC BOARD, LAMP | | | |
| 906 | 1-807-686-11 | DISPLAY PANEL, LIQUID CRYSTAL | | | |
| 907 | *1-620-603-11 | PC BOARD, LOADING MOTOR | | | |
| 909 | *1-620-097-11 | PC BOARD, SL/SP MOTOR | | | |
| 910 | ⚠8-848-062-01 | PICKUP, OPTICS KSS-150A | | | |
| C103 | 1-124-907-00 | ELECT | 10MF | 20% | 50V |
| C105 | 1-124-898-11 | ELECT | 4700MF | 20% | 16V |
| C106 | 1-124-898-11 | ELECT | 4700MF | 20% | 16V |
| C107 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C108 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C110 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C113 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C114 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C115 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C116 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C117 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C118 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C119 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C120 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C121 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C122 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C123 | 1-124-907-00 | ELECT | 10MF | 20% | 50V |
| C124 | 1-123-821-00 | ELECT | 47MF | 20% | 16V |
| C125 | 1-123-821-00 | ELECT | 47MF | 20% | 16V |
| C126 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C127 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C128 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C131 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C133 | 1-123-821-00 | ELECT | 47MF | 20% | 16V |
| C150 | 1-102-121-00 | CERAMIC | 0.0022MF | 10% | 50V |
| C201 | 1-110-217-11 | MYLAR | 470PF | 5% | 50V |
| C202 | 1-110-217-11 | MYLAR | 470PF | 5% | 50V |
| C203 | 1-110-195-00 | MYLAR | 0.001MF | 5% | 50V |
| C204 | 1-110-195-00 | MYLAR | 0.001MF | 5% | 50V |
| C205 | 1-110-199-00 | MYLAR | 0.0022MF | 5% | 50V |
| C206 | 1-110-199-00 | MYLAR | 0.0022MF | 5% | 50V |
| C207 | 1-110-199-00 | MYLAR | 0.0022MF | 5% | 50V |
| C208 | 1-110-199-00 | MYLAR | 0.0022MF | 5% | 50V |
| C209 | 1-136-153-00 | FILM | 0.01MF | 5% | 50V |
| C210 | 1-136-153-00 | FILM | 0.01MF | 5% | 50V |
| C211 | 1-110-217-11 | MYLAR | 470PF | 5% | 50V |
| C212 | 1-110-217-11 | MYLAR | 470PF | 5% | 50V |
| C213 | 1-123-330-00 | ELECT | 22MF | 20% | 16V |
| C214 | 1-123-330-00 | ELECT | 22MF | 20% | 16V |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| C215 | 1-162-290-31 | CERAMIC | 470PF | 10% | 50V |
| C216 | 1-162-290-31 | CERAMIC | 470PF | 10% | 50V |
| C301 | 1-124-443-00 | ELECT | 100MF | 20% | 10V |
| C302 | 1-110-199-00 | MYLAR | 0.0022MF | 5% | 50V |
| C303 | 1-162-201-31 | CERAMIC | 12PF | 5% | 50V |
| C304 | 1-136-159-00 | FILM | 0.033MF | 5% | 50V |
| C305 | 1-136-159-00 | FILM | 0.033MF | 5% | 50V |
| C306 | 1-136-153-00 | FILM | 0.01MF | 5% | 50V |
| C307 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V |
| C308 | 1-136-161-00 | FILM | 0.047MF | 5% | 50V |
| C309 | 1-124-905-11 | ELECT | 3.3MF | 20% | 50V |
| C310 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V |
| C312 | 1-124-907-00 | ELECT | 10MF | 20% | 50V |
| C313 | 1-136-165-00 | FILM | 0.1MF | 5% | 50V |
| C314 | 1-124-903-00 | ELECT | 1MF | 20% | 50V |
| C315 | 1-124-927-11 | ELECT | 4.7MF | 20% | 50V |
| C316 | 1-110-203-00 | MYLAR | 0.0047MF | 5% | 50V |
| C317 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V |
| C318 | 1-124-902-00 | ELECT | 0.47MF | 20% | 50V |
| C319 | 1-136-159-00 | FILM | 0.033MF | 5% | 50V |
| C320 | 1-110-199-00 | MYLAR | 0.0022MF | 5% | 50V |
| C321 | 1-136-153-00 | FILM | 0.01MF | 5% | 50V |
| C322 | 1-124-902-00 | ELECT | 0.47MF | 20% | 50V |
| C323 | 1-162-211-31 | CERAMIC | 33PF | 5% | 50V |
| C324 | 1-162-211-31 | CERAMIC | 33PF | 5% | 50V |
| C325 | 1-162-294-31 | CERAMIC | 0.001MF | 10% | 50V |
| C326 | 1-162-304-31 | CERAMIC | 0.0047MF | 20% | 16V |
| C401 | 1-162-306-31 | CERAMIC | 0.01MF | 20% | 16V |
| C601 | 1-136-157-00 | FILM | 0.022MF | 5% | 50V |
| CNJ1 | *1-564-720-11 | PIN, CONNECTOR (SMALL TYPE) 4P | | | |
| CNJ2 | *1-564-720-41 | PIN, CONNECTOR (SMALL TYPE) 4P | | | |
| CNJ3 | *1-564-724-11 | PIN, CONNECTOR (SMALL TYPE) 8P | | | |
| CNJ4 | *1-564-720-31 | PIN, CONNECTOR (SMALL TYPE) 4P | | | |
| CNJ5 | *1-564-495-11 | PIN, CONNECTOR 2P | | | |
| CNJ6 | *1-564-496-11 | PIN, CONNECTOR 3P | | | |
| ⚠CNJ7-1. | *1-566-214-11 | PIN, CONNECTOR (PC BOARD) 2P | | | |
| ⚠CNJ7-2. | *1-564-718-11 | PIN, CONNECTOR (SMALL TYPE) 2P | | | |
| CNJ8 | *1-564-705-11 | PIN, CONNECTOR (SMALL TYPE) 3P | | | |
| ⚠CNJ9 . | *1-564-498-11 | PIN, CONNECTOR 5P | | | |
| ⚠CNJ11. | *1-566-211-11 | PIN, CONNECTOR 4P | | | |
| CNJ13 | *1-564-337-00 | PIN, CONNECTOR 3P | | | |
| CNJ15 | *1-562-999-21 | JACK, PIN 2P (LINE OUT) | | | |
| CNJ21 | *1-564-705-11 | PIN, CONNECTOR (SMALL TYPE) 3P | | | |
| D101 | ⚠8-719-511-20 | DIODE S1VB20 | | | |
| D201 | 8-719-941-37 | DIODE LT8500R1 | | | |
| D202 | 8-719-815-55 | DIODE 1S1555 | | | |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description |
|---|---|---|
| D203 | 8-719-815-55 | DIODE 1S1555 |
| D204 | 8-719-815-55 | DIODE 1S1555 |
| D205 | 8-719-815-55 | DIODE 1S1555 |
| IC1 | 8-752-030-93 | IC CXA1081M |
| IC2 | 8-752-030-94 | IC CXA1082Q |
| IC3 | 8-752-322-05 | IC CXD1135Q |
| IC4 | 8-752-320-44 | IC CXK5816M-10L |
| IC5 | 8-759-604-62 | IC M50430-431FP |
| IC6 | 8-759-303-90 | IC STA341M |
| IC7 | 8-759-202-01 | IC TA7256P |
| IC8 | 8-759-604-03 | IC M5290P |
| IC9 | 8-759-604-00 | IC M51565SP |
| IC10 | 8-759-604-00 | IC PCM56PS |
| IC12 | 8-759-803-41 | IC LC4969 |
| J1 | 1-563-485-21 | JACK, LARGE TYPE (HEADPHONES) |
| L301 | 1-408-563-00 | MICRO INDUCTOR 10UH |
| M251 | A-4608-330-A | MOTOR ASSY (LOADING) |
| PL1 | 1-518-606-11 | LAMP, PILOT |
| PL2 | 1-518-606-11 | LAMP, PILOT |
| PS1 | 1-532-685-00 | LINK, IC |
| PS2 | 1-532-685-00 | LINK, IC |
| PS3 | 1-532-605-00 | LINK, IC |
| PS4 | 1-532-605-00 | LINK, IC |
| PS5 | 1-532-686-00 | LINK, IC |
| PS6 | 1-532-686-00 | LINK, IC |
| Q1 | 8-729-804-67 | TRANSISTOR 2SB1133-R |
| Q2 | 8-729-804-17 | TRANSISTOR 2SD1666-R |
| Q3 | 8-729-801-83 | TRANSISTOR 2SB1013 |
| Q4 | 8-729-806-38 | TRANSISTOR 2SC3399 |
| Q5 | 8-729-806-38 | TRANSISTOR 2SC3399 |
| Q7 | 8-729-900-67 | TRANSISTOR DTA124XS |
| Q10 | 8-729-107-77 | TRANSISTOR 2SC3623-L |
| Q11 | 8-729-107-77 | TRANSISTOR 2SC3623-L |
| R101 | 1-249-405-11 | CARBON 100 5% 1/6W |
| R102 | 1-249-429-11 | CARBON 10K 5% 1/6W |
| R103 | 1-249-425-11 | CARBON 4.7K 5% 1/6W |
| R104 | 1-249-425-11 | CARBON 4.7K 5% 1/6W |
| R110 | 1-249-441-11 | CARBON 100K 5% 1/6W |
| R201 | 1-247-852-00 | CARBON 7.5K 5% 1/6W |
| R202 | 1-247-852-00 | CARBON 7.5K 5% 1/6W |
| R203 | 1-247-839-00 | CARBON 2.2K 5% 1/6W |
| R204 | 1-247-839-00 | CARBON 2.2K 5% 1/6W |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| R205 | 1-247-838-00 | CARBON | 2K | 5% | 1/6W |
| R206 | 1-247-838-00 | CARBON | 2K | 5% | 1/6W |
| R207 | 1-247-851-00 | CARBON | 6.8K | 5% | 1/6W |
| R208 | 1-247-851-00 | CARBON | 6.8K | 5% | 1/6W |
| R209 | 1-247-852-00 | CARBON | 7.5K | 5% | 1/6W |
| R210 | 1-247-852-00 | CARBON | 7.5K | 5% | 1/6W |
| R211 | 1-215-431-00 | METAL | 2.7K | 1% | 1/6W |
| R212 | 1-215-431-00 | METAL | 2.7K | 1% | 1/6W |
| R213 | 1-215-431-00 | METAL | 2.7K | 1% | 1/6W |
| R214 | 1-215-431-00 | METAL | 2.7K | 1% | 1/6W |
| R215 | 1-215-431-00 | METAL | 2.7K | 1% | 1/6W |
| R216 | 1-215-431-00 | METAL | 2.7K | 1% | 1/6W |
| R217 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R218 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R219 | 1-247-833-00 | CARBON | 1.2K | 5% | 1/6W |
| R220 | 1-247-833-00 | CARBON | 1.2K | 5% | 1/6W |
| R223 | 1-249-433-11 | CARBON | 22K | 5% | 1/6W |
| R224 | 1-249-433-11 | CARBON | 22K | 5% | 1/6W |
| R225 | 1-247-702-11 | CARBON | 150 | 5% | 1/4W |
| R226 | 1-247-702-11 | CARBON | 150 | 5% | 1/4W |
| R227 | 1-247-819-00 | CARBON | 330 | 5% | 1/6W |
| R228 | 1-247-819-00 | CARBON | 330 | 5% | 1/6W |
| R229 | 1-247-833-00 | CARBON | 1.2K | 5% | 1/6W |
| R230 | 1-247-833-00 | CARBON | 1.2K | 5% | 1/6W |
| R231 | 1-249-417-11 | CARBON | 1K | 5% | 1/6W |
| R232 | 1-249-417-11 | CARBON | 1K | 5% | 1/6W |
| R233 | 1-249-417-11 | CARBON | 1K | 5% | 1/6W |
| R235 | 1-247-821-00 | CARBON | 390 | 5% | 1/6W |
| R244 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R301 | 1-214-092-00 | METAL | 22 | 1% | 1/4W |
| R302 | 1-247-845-00 | CARBON | 3.9K | 5% | 1/6W |
| R303 | 1-249-432-11 | CARBON | 18K | 5% | 1/6W |
| R304 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R305 | 1-249-433-11 | CARBON | 22K | 5% | 1/6W |
| R306 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R307 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R308 | 1-215-437-00 | METAL | 4.7K | 1% | 1/6W |
| R309 | 1-215-437-00 | METAL | 4.7K | 1% | 1/6W |
| R310 | 1-247-767-00 | CARBON | 2.2 | 5% | 1/6W |
| R311 | 1-247-883-00 | CARBON | 150K | 5% | 1/6W |
| R312 | 1-247-767-00 | CARBON | 2.2 | 5% | 1/6W |
| R313 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R314 | 1-247-889-00 | CARBON | 270K | 5% | 1/6W |
| R315 | 1-249-435-11 | CARBON | 33K | 5% | 1/6W |
| R316 | 1-247-767-00 | CARBON | 2.2 | 5% | 1/6W |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| R317 | 1-247-881-00 | CARBON | 120K | 5% | 1/6W |
| R318 | 1-247-853-00 | CARBON | 8.2K | 5% | 1/6W |
| R319 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R320 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R321 | 1-249-433-11 | CARBON | 22K | 5% | 1/6W |
| R322 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R323 | 1-247-881-00 | CARBON | 120K | 5% | 1/6W |
| R324 | 1-215-434-00 | METAL | 3.6K | 1% | 1/6W |
| R325 | 1-247-903-00 | CARBON | 1M | 5% | 1/6W |
| R326 | 1-247-862-00 | CARBON | 20K | 5% | 1/6W |
| R327 | 1-249-437-11 | CARBON | 47K | 5% | 1/6W |
| R328 | 1-249-425-11 | CARBON | 4.7K | 5% | 1/6W |
| R329 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R330 | 1-259-033-11 | CARBON | 1 | 5% | 1/6W |
| R331 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R332 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R333 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R334 | 1-247-896-00 | CARBON | 510K | 5% | 1/6W |
| R336 | 1-215-469-00 | METAL | 100K | 1% | 1/6W |
| R337 | 1-215-469-00 | METAL | 100K | 1% | 1/6W |
| R338 | 1-249-417-11 | CARBON | 1K | 5% | 1/6W |
| R339 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R340 | 1-247-806-00 | CARBON | 91 | 5% | 1/6W |
| R401 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R402 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R403 | 1-249-429-11 | CARBON | 10K | 5% | 1/6W |
| R410 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R411 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R412 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R413 | 1-249-440-11 | CARBON | 82K | 5% | 1/6W |
| R414 | 1-259-033-11 | CARBON | 1 | 5% | 1/6W |
| R415 | 1-249-441-11 | CARBON | 100K | 5% | 1/6W |
| R417 | 1-249-425-11 | CARBON | 4.7K | 5% | 1/6W |
| RV301 | 1-237-194-21 | RES, ADJ, CARBON 20K | | | |
| RV302 | 1-237-192-21 | RES, ADJ, CARBON 5K | | | |
| RV303 | 1-237-194-21 | RES, ADJ, CARBON 20K | | | |
| RV304 | 1-237-194-21 | RES, ADJ, CARBON 20K | | | |
| RV305 | 1-228-990-00 | RES, ADJ, METAL GLAZE 1K | | | |

ELECTRICAL PARTS

| Ref.No. | Part No. | Description |
|---|---|---|
| SW1 | 1-554-088-51 | SWITCH, KEY BOARD |
| SW2 | 1-554-088-51 | SWITCH, KEY BOARD |
| SW3 | 1-570-577-11 | SWITCH, PUSH (PLAY/PAUSE) |
| SW4 | 1-554-088-61 | SWITCH, KEY BOARD (STOP/CLEAR) |
| SW5 | 1-554-088-61 | SWITCH, KEY BOARD (MEMORY/TIME) |
| SW6 | 1-554-088-61 | SWITCH, KEY BOARD (REPEAT) |
| SW7 | 1-554-088-61 | SWITCH, KEY BOARD (SHUFFLE) |
| SW8 | 1-554-088-61 | SWITCH, KEY BOARD (OPEN/CLOSE) |
| SW9 | ⚠1-552-928-00 | SWITCH (POWER) |
| SW11 | 1-570-203-11 | SWITCH, LEAF |
| X1 | 1-567-301-21 | OSCILLATOR, CRYSTAL |

ACCESSORY & PACKING MATERIAL

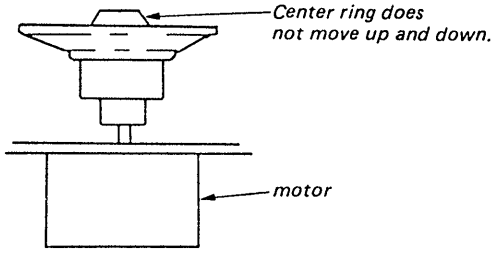
| Part No. | Description |
|---|---|
| 3-701-613-00 | BAG, POLYETHYLENE |
| 3-703-713-41 | STICKER, SONY SYMBOL (10) |
| *4-885-838-00 | LABEL, CLASS 1 |
| 4-917-578-01 | CUSHION |
| 4-917-589-51 | INDIVIDUAL CARTON |
| 4-918-640-01 | FASTENER, SIDE PLATE |
| 4-918-644-01 | PLATE, SIDE |
| 7-632-650-75 | SHEET, PROTECTION (500MH) |

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

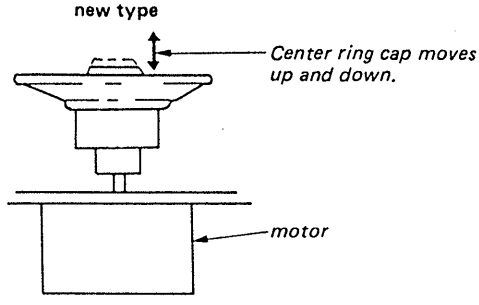
The mechanism section has been changed partly during manufacturing. There are 2 types of magnet assy and base (out surt) assy. When replacing these parts, please use new type parts.

1. Discrimination between former and new type.
   - base (outsurt) assy

former type

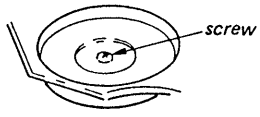



new type

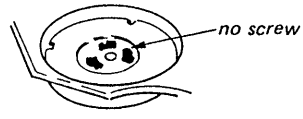



   - magnet assy

former type




new type




2. Interchangeability between former and new type/Caution on replacing.
   - No interchangeability between former and new type.
   - Please replace magnet assy toghter when replacing base (outsurt) assy and please replace base (outsurt) assy toghter when replace magnet assy and also please use new type parts at that time.

3. Former and new type parts list. (page 21, 22)

| former type | | | | new type | | |
|---|---|---|---|---|---|---|
| No | Part No. | Description | | No | Part No. | Description |
| 57 | A-4665-012-A | MAGNET ASSY | ⇨ | 57 | A-4665-024-A | MAGNET ASSY |
| 104 | X-4917-505-1 | BASE (OUTSURT) ASSY | | 104 | X-4917-523-1 | BASE (OUTSURT) ASSY |

9-952-712-12
(Including 9-972-712-81
9-972-712-91
9-972-712-92)

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